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09/772,658	01/30/2001	Noriyoshi Chizawa	1232-4677	2163

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EXAMINER	
THOMPSON, JAMES A	

ART UNIT	PAPER NUMBER
2625	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	09/772,658	CHIZAWA, NORIYOSHI	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 July 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-17,19-27 and 86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-17,19-27 and 86* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 20 July 2007 have been fully considered but they are not persuasive. While Examiner does agree with Applicant that the present amendments to the claims do overcome the combination of prior art references set forth in the previous office action, mailed 24 April 2007, additional prior art has been discovered which renders the present claims obvious to one of ordinary skill in the art at the time of the invention. Accordingly, new prior art rejections are set forth below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 3, 5, 7-8, 12-15, 17, 19-21, 25-27 and 86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orito (US Patent 6,072,912) in view of Taguchi (US Patent 5,771,106) and Sugiura (US Patent 4,679,074).

Regarding claims 1, 15 and 86: Orito discloses an image sensing system (figure 1(1) of Orito) constituted by connecting an image sensing apparatus (figure 1(30) of Orito) and image processing apparatus (figure 1(10) of Orito) (column 5, lines 4-7 of Orito). Figure 2 of Orito shows further details of said image processing apparatus (column 4, lines 45-46 of Orito). Figure 5 of Orito shows further details of said image sensing apparatus (column 4, lines 50-52 of Orito).

Orito further discloses that said image sensing apparatus comprises a storage medium (figure 5 (73) of Orito) adapted to hold data on image sensing characteristic (column 6, lines 29-34 of Orito); and an output unit (figure 5(77) of Orito) adapted to output the data on image sensing characteristic held in said storage medium to said image processing apparatus (column 6, lines 6-14 of Orito).

Orito further discloses that said image processing apparatus comprises an input unit (figure 2(24) of Orito) adapted to receive the data on image sensing characteristic output from said image sensing apparatus (column 6, line 66 to column 7, line 6 of Orito); a generation unit (figure 2(17(portion)) of Orito) adapted to generate image sensing characteristic correction data (column 8, lines 41-45 of Orito) on

the basis of the data on image sensing characteristic received by said input unit (column 8, lines 48-53 of Orito); and an image sensing characteristic correction unit (figure 2(17(portion)) of Orito) adapted to correct the influence of an image sensing characteristic on the image data received from said image sensing apparatus (column 8, lines 41-45 of Orito) using the image sensing characteristic correction data generated by said generation unit (column 8, lines 48-53 of Orito). Correcting an image sensing characteristic of image data received from said image sensing apparatus (column 8, lines 41-45 of Orito) inherently requires the generation in some form of said image sensing characteristic correction data in order to perform said correction. The control unit (figure 5(70) of Orito) comprises a CPU (figure 5(71) of Orito), a ROM (figure 5(72) of Orito), and a RAM (figure 5(73) of Orito) (column 6, lines 1-4 of Orito). Said generation unit and said image sensing characteristic correction unit correspond to the associated portion of the physically embodied software stored in said ROM, along with the RAM needed by the CPU to execute said program software, that is used to perform the functions of said generation unit and said image sensing characteristic correction unit.

Orito does not disclose expressly that said image sensing apparatus comprises an image sensing unit adapted to sense an original and output image data of the original, wherein said image sensing unit includes an image sensor which has a plurality of photoelectric conversion element arrays for respectively photoelectrically converting light of a plurality of colors; and a shading correction unit adapted to apply shading correction to the image data output from said image sensing unit. Orito further does not disclose expressly that said storage medium of said image sensing apparatus is adapted to hold data on an image sensing characteristic which is different from data for the shading correction.

Orito further does not disclose expressly that said image sensing characteristic correction unit of said image processing apparatus corrects the influence of an image sensing characteristic on the shading-corrected image data, and thus performs correction different than shading correction; and that said image sensing characteristic indicates spatial positional deviations of the plurality of colors of pixel signals, obtained by said plurality of photoelectric conversion element arrays within a single chip of said image sensor, with respect to one of said pixel signals obtained by one of said plurality of photoelectric conversion element arrays.

Taguchi discloses an image sensing unit (figure 1(100) of Taguchi) adapted to sense an original and output image data of the original, wherein said image sensing unit includes an image sensor which has a plurality of photoelectric conversion element arrays (CCD) for respectively photoelectrically converting light of a plurality of colors (column 7, lines 16-26 and column 8, lines 28-35 of Taguchi); a shading correction unit (figure 3B(323-325) of Taguchi) adapted to apply shading correction to the image

data output from said image sensing unit (column 13, line 62 to column 14, line 11 of Taguchi); and an image sensing characteristic which indicates spatial positional deviations of a plurality of colors of pixel signals, obtained by said plurality of photoelectric conversion element arrays within a single chip of said image sensor, with respect to one of said pixel signals obtained by one of said plurality of photoelectric conversion element arrays (column 14, lines 24-32 of Taguchi – *CCD sensor [figure 1(106) of Taguchi] is a 3-line CCD contained as a single unit [see column 7, lines 20-26 of Taguchi], and thus one can reasonably interpret the CCD image sensor to be within a single chip*).

Orito and Taguchi are combinable because they are from the same field of endeavor, namely correction of scanned input digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply CCD color gap correction and shading correction for digital input image data. The motivation for doing so would have been to better correct for common artifacts in digital image data scanning. Therefore, it would have been obvious to combine Taguchi with Orito.

Orito in view of Taguchi does not disclose expressly that said storage medium of said image sensing apparatus is adapted to hold data on an image sensing characteristic which is different from data for the shading correction; and that said image sensing characteristic correction unit of said image processing apparatus corrects the influence of an image sensing characteristic on the shading-corrected image data, and thus performs correction different than shading correction.

Sugiura discloses holding data on an image sensing characteristic (figure 1(102) and figure 4 (405) of Sugiura) which is different from data for shading correction (column 2, lines 35-41 and column 4, lines 5-8 of Sugiura); and correcting the influence of an image sensing characteristic different than shading correction (column 2, lines 35-41 and column 4, lines 5-8 of Sugiura). Color conversion based on the connected input device (column 2, lines 35-41 and column 4, lines 5-8 of Sugiura) is clearly a different image sensing characteristic than shading correction.

Orito in view of Taguchi is combinable with Sugiura because they are from the same field of endeavor, namely correction of input digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have the storage medium taught by Orito hold data for an image sensing characteristic that is different from data for shading correction, as taught by Sugiura; and have the an image sensing characteristic correction unit taught by Orito correct the influence of said image sensing characteristic, as taught by Sugiura. The motivation for doing so would have been to correct for the various input devices so as to standardize the resultant output (column 1, lines 33-41 of

Sugiura). Therefore, it would have been obvious to combine Sugiura with Orito in view of Taguchi to obtain the invention as specified in claims 1, 15 and 86.

Further regarding claim 15: The apparatus of claim 15 is fully embodied within the system of claim 1.

Further regarding claim 86: The apparatus of claim 86 is fully embodied within the system of claim 1.

Regarding claims 3 and 17: Orito does not disclose expressly that said image sensing characteristic includes a characteristic for each of a plurality of colors to be sensed.

Taguchi discloses an image sensing characteristic for each of a plurality of colors to be sensed (column 7, lines 20-26 and column 13, lines 58-65 of Taguchi).

Orito and Taguchi are combinable because they are from the same field of endeavor, namely the correction of scanned digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an image sensing characteristic for each color, as taught by Taguchi. The motivation for doing so would have been to correct shading for each individual color (column 13, lines 58-65 of Taguchi). Therefore, it would have been obvious to combine Taguchi with Orito to obtain the invention as specified in claims 3 and 17.

Regarding claim 5: Orito discloses that the data on image sensing characteristic is output from said image sensing apparatus to said image processing apparatus upon starting up said image sensing apparatus (figure 6 and column 7, lines 36-38 of Orito).

Regarding claims 7 and 20: Orito in view of Taguchi does not disclose expressly that said image sensing apparatus further comprises updating means for, when an exchangeable unit including said image sensor is exchanged, updating the data on image sensing characteristic held in said storage medium in accordance with a characteristic of the unit.

Sugiura discloses updating unit (figure 3(406) of Sugiura) adapted to, when an exchangeable unit including said image sensor is exchanged (column 4, lines 5-6 of Sugiura), update the data on image sensing characteristic held in said storage medium in accordance with a characteristic of the unit (column 4, lines 6-13 of Sugiura).

Orito in view of Taguchi is combinable with Sugiura because they are from the same field of endeavor, namely digital image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include the updating unit taught by Sugiura. The motivation for doing so would have been to compensate for the different properties of the different input devices

(column 4, lines 10-13 of Sugiura). Therefore, it would have been obvious to combine Sugiura with Orito in view of Taguchi to obtain the invention as specified in claims 7 and 20.

Regarding claims 8 and 21: Orito discloses that when the data on image sensing characteristic held in said storage medium is updated (column 7, lines 40-44 and lines 58-60 of Orito), said output unit outputs the updated data on image sensing characteristic to said image processing apparatus (column 8, lines 16-18 of Orito).

Further regarding claims 12 and 25: Taguchi discloses that said image sensing apparatus further comprises an optical system (figure 1(101-106) of Taguchi) for forming an original image on an imaging surface of said image sensor, and said image sensor senses the original image (column 7, lines 16-26 of Taguchi).

Regarding claims 13 and 26: Orito does not disclose expressly that said image sensor has the plurality of photoelectric conversion element arrays which are separated at a predetermined line spacing.

Taguchi disclose that said image sensor has the plurality of photoelectric conversion element arrays which are separated at a predetermined line spacing (column 14, lines 24-32 of Taguchi – *3 lines of CCD are corrected for positional variations, and are thus separated at a predetermined line spacing – without predetermined line spacing, there could be no positional variation to correct*).

Orito and Taguchi are combinable because they are from the same field of endeavor, namely the correction of scanned digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use an image sensor in which the plurality of photoelectric conversion element arrays are separated at a predetermined line spacing, as taught by Taguchi. The motivation for doing so would have been to provide a consistent reading of the document image. Therefore, it would have been obvious to combine Taguchi with Orito to obtain the invention as specified in claims 13 and 26.

Further regarding claims 14 and 27: Taguchi discloses that the plurality of colors are three colors including red (R), green (G), and blue (B) (column 7, lines 20-26 of Taguchi), and the data on image sensing characteristic includes data indicating spatial deviation amounts among R, G, and B pixel signals (column 14, lines 24-32 of Taguchi).

Regarding claim 19: Orito discloses that the data on image sensing characteristic is output from said image sensing apparatus to the external image processing apparatus in an initial communication there between (column 7, lines 36-44 of Orito).

4. Claims 2, 6 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orito (US Patent 6,072,912) in view of Taguchi (US Patent 5,771,106), Sugiura (US Patent 4,679,074), and Ohta (US Patent 5,875,260).

Regarding claims 2 and 16: Orito in view of Taguchi and Sugiura does not disclose expressly that the image sensing characteristic is a linearity characteristic.

Ohta discloses an image sensing characteristic (L*a*b* space) that is a linearity characteristic (column 4, lines 4-7 of Ohta).

Orito in view of Taguchi and Sugiura is combinable with Ohta because they are from the same field of endeavor, namely the correction of digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a linearity characteristic, such as the L*a*b* space taught by Ohta, as the image sensing characteristic. The motivation for doing so would have been that L*a*b* space is a standardized color space that has been provided by the CIE (column 4, lines 4-5 of Ohta). Therefore, it would have been obvious to combine Ohta with Orito in view of Taguchi and Sugiura to obtain the invention as specified in claims 2 and 16.

Regarding claim 6: Orito in view of Taguchi and Sugiura does not disclose expressly that said generation unit generates the image sensing characteristic correction data by inversely converting the data on image sensing characteristic.

Ohta discloses generating image sensing characteristic correction data (R',G',B') by inversely converting the data on image sensing characteristic (column 5, lines 60-64 of Ohta).

Orito in view of Taguchi and Sugiura is combinable with Ohta because they are from the same field of endeavor, namely the correction of digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to inversely convert the data on image sensing characteristic, as taught by Ohta. The motivation for doing so would have been to obtain the image signals resulting from the image data correction in the original color space (RGB) (column 5, lines 61-63 of Ohta). Therefore, it would have been obvious to combine Ohta with Orito in view of Taguchi and Sugiura to obtain the invention as specified in claim 6.

5. Claims 9-11 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Orito (US Patent 6,072,912) in view of Taguchi (US Patent 5,771,106), Sugiura (US Patent 4,679,074), and Kamisuwa (US Patent 6,728,008 B1).

Regarding claims 9 and 22: Orito in view of Taguchi and Sugiura does not disclose expressly an optical element which brings about a change in spatial positional deviation amount of the plurality of

colors of pixel signals obtained by the plurality of photoelectric conversion element arrays of said image sensor, and the data on image sensing characteristic includes basic data which indicates a basic amount of the positional deviation amount, and auxiliary data which indicates a change characteristic of the positional deviation amount.

Kamisuwa discloses an optical element (figure 2(OP) of Kamisuwa) which brings about a change in spatial positional deviation amount of the plurality of colors of pixel signals obtained by the plurality of photoelectric conversion element arrays of said image sensor (column 6, lines 12-20 of Kamisuwa), and the data on image sensing characteristic includes basic data (a,b,c) which indicates a basic amount of the positional deviation amount (column 8, lines 6-10 of Kamisuwa), and auxiliary data (Ia,Ib,Ic) which indicates a change characteristic of the positional deviation amount (column 8, lines 11-16 of Kamisuwa).

Orito in view of Taguchi and Sugiura are combinable with Kamisuwa because they are from the same field of endeavor, namely the correction of scanned digital image data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform the positional correction of the CCD sensor elements using an optical element, rather than an electronic element as taught by Taguchi, and include basic and auxiliary data indicating position deviation amount and change characteristic of the positional deviation amount, respectively. The suggestion for doing so would have been that using optical means for correcting the CCD element positional deviations will correct for positional deviations due to physical defects in the CCD sensor array. Therefore, it would have been obvious to combine Kamisuwa with Orito in view of Taguchi and Sugiura to obtain the invention as specified in claims 9 and 22.

Further regarding claims 10 and 23: Kamisuwa discloses that said optical element is controlled or adjusted in accordance with a magnification of an image sensed by said image sensor (column 6, lines 7-9 and lines 12-15 of Kamisuwa).

Regarding claims 11 and 24: Orito in view of Taguchi and Sugiura does not disclose expressly that the data on image sensing characteristic includes data which indicates a relationship between actual positions at which light forms images on the plurality of photoelectric conversion element arrays, and design positions thereof.

Kamisuwa discloses that the data on image sensing characteristic includes data which indicates a relationship between actual positions at which light forms images on the plurality of photoelectric conversion element arrays, and design positions thereof (column 8, lines 6-10 of Kamisuwa).

Orito in view of Taguchi and Sugiura are combinable with Kamisuwa because they are from the same field of endeavor, namely the correction of scanned digital image data. At the time of the invention,

it would have been obvious to a person of ordinary skill in the art to store the relationship between the actual positions of the image forming elements and the design positions, as taught by Kamisuwa. The suggestion for doing so would have been to be able to perform proper output level variation between the sensors (column 8, lines 11-20 of Kamisuwa), thus resulting in improved digital image output. Therefore, it would have been obvious to combine Kamisuwa with Orito in view of Taguchi and Sugiura to obtain the invention as specified in claims 11 and 24.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
   a. Himoto, USPN 6,055,074, Patented 25 April 2000, Filed 13 April 1998.
   b. Kouno et al., USPN 5,309,258, Patented 03 May 1994, Filed 11 September 1992.

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/JAT/
07 September 2007

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